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ECONOMIC AFFAIRS

No. 942

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ROLE OF LOCAL SOVIETS IN ECONOMIC DEVELOPMENT STRESSED

Moscow PRAVDA in Russian 18 Sep 80 p 2

[Article by L. Yermin, first deputy chairman of the RSFSR Council of Ministers: "Dictated by Practice"]

> [Text] The soviets' role in solving the main problems of the development of our country's economy, science and culture increases from year to year. The law "The Fundamental Powers of the Kray and Oblast Soviets of People's Deputies and the Soviets of People's Deputies of Autonomous Oblasts and Autonomous Okrugs," which was adopted by the Third Session of the USSR Supreme Soviet of the 10th Convocation, has opened to them new horizons of creative activity in the leadership of state and sociocultural building. The powers of the local bodies of the people's political power in all spheres of the life of our society have been determined in accordance with the USSR Constitution and the decisions of the 25th CPSU Congress. Their diverse activity is being exercised under the leadership of the party committees.
>
> Leonid Il'ich Brezhnev has pointed out that in economic building there are tasks which no one can accomplish better than the soviets. One of the most important such tasks is the comprehensive economic and social development of the territories under their jurisdiction. The more complex the economic structure, the more responsible the role of the soviets in coordinating the activity of the enterprises and organizations located on their territory.

Henceforward the soviets will have sufficient opportunities to cope with this, proceeding from the highest state interests and in a proprietorial manner. They merely have to make full use of their constitutional powers in monitoring the observance by enterprises and organizations of local, republic and union jurisdiction of legislation in the sphere of land use and nature conservation and fulfillment of the plans of construction, consumer goods production and sociocultural and consumer services. The soviets have to formulate long-term and annual balances of labor resources, participate in the compilation of territorial balances of the production and distribution of products and programs for solving large-scale regional problems and compile and approve consolidated 5-year and annual plans of the production of local construction materials and consumer goods and of sociocultural building. The benefit of this is shown convincingly by the experience of the soviet authorities of Moscow and Leningrad, Sverdlovskaya and Leningrad Oblast and Krasnoyarskiy Kray, where comprehensive plans have been consistently implemented for several years now.

One such program was summoned into being by the CPSU Central Committee and USSR Council of Ministers decree "Measures for the Comprehensive Development of Krasnoyarskiy Kray's Production Forces in the Period 1971-1980." Since 1971 the krayispolkom, with the participation of institutes of the Siberian Department of the USSR Academy of Sciences, has been persistently implementing this program, which includes a concerted upsurge of the diversified economy and an increase in the construction of housing and sociocultural and everyday facilities and a constant increase in the population's living standard.

The results are striking. Industrial production has almost doubled in these years, new sectors of industry have appeared and the Severo-Krasnoyarskiy and Sayanskiy territorial-production and the Kanska-Achinskiy fuel-energy complexes are taking shape. Apartment houses with a total area of approximately 7 million square meters were introduced and schools for almost 73,000 students and children's establishments for more than 30,000 children and hospitals with 3,400 beds were built in 4 years of the present 5-year plan.

The example of the city of Angarsk, where the programs of economic and social development are discussed in the labor collectives, is also instructive. A commission headed by the gorispolkom chairman has been set up to monitor fulfillment of this city-wide plan. Angarsk is already fully provided with children's preschool establishments, hospitals and polyclinics and almost fully provided with schools and sales and public catering enterprises. With the help of its permanent commissions and groups of deputies the city soviet is coordinating the work of the enterprises and organizations. The hothouse combine created with their several participation is satisfying 95 percent of the sales enterprises' and catering establishments' vegetable requirements, and the city's medical establishments are provided with whole milk.

Yet it is far from always that the local soviet ispolkoms are able to use power in the interests of fulfillment of state plans and observance of the necessary proportions in the development of the economy on the territories under their jurisdiction. They must on no occasion become reconciled to this department or the other endeavoring to reduce the costs and accelerate the construction of enterprises by, say, economizing on the construction of housing and municipal and other sociocultural facilities. Such an "economy" proves costly. Housing, municipal and cultural-everyday construction is lagging behind the development of production, and provision of the cities and centers of population with amenities is being unduly prolonged.

Measures incorporated in the plans with the consent of the ministries, particularly for sociocultural construction, are sometimes not implemented, which engenders serious disproportions in the development of a city or kray and oblast even. The USSR Ministry of Chemical Industry, Ministry of Heavy and Transport Machine Building, Ministry of Timber and Wood-Processing Industry and the Ministry of Ferrous Metallurgy have manifestly minimized capital investments in an upsurge of the production forces of the RSFSR's eastern regions compared with the 5-year plan quotas. The USSR Ministry of Coal Industry, which is installing the city of Neryungri--the center of the Yuzhno-Yakutsk coal complex--has fallen behind in the construction of houses for the workers and specialists. The comprehensive development of the city of Tol'yatti is being held back owing to the lag in the commissioning of children's preschool establishments, hospitals, cultural-entertainment establishments and sales and public catering enterprises. In 2 years the Ministry of Automotive Industry and the Ministry of Chemical Industry failed to hand over R49 million for the city's sociocultural construction, and the main contractor--the USSR Ministry of Power and Electrification's "Kuybyshevgidrostroy" Administration--fails, as a rule, to fulfill the plans for the installation of such facilities.

Proceeding from departmental interests, the ministries frequently insist on the "attachment" of new enterprises in the large cities and, in spite of the procedure determined by the RSFSR Government, attempt to decide these questions without the participation of the local organs of power. This approach is wrong for it could lead to the excessive concentration of industry in population, particularly in the administrative centers of the European part of the country and the Urals, environmental pollution in areas of big cities and also to considerable deficiencies in the use of labor resources and production capacity. The ispolkoms do not have the right to give in to such departmental endeavors.

The extension of the soviets' rights significantly increases their responsibility for all aspects of economic and cultural building. Many ispolkoms even now act as the single clients of housing and cultural-social facilities, concentrating in their own hands the resources allocated for this purpose to enterprises of local, republic and union jurisdiction. Nevertheless, in the RSFSR more than half of urban housing is still in the hands of various departments. Almost 4,000 enterprises are the proprietors of water mains in the cities and workers' settlements, approximately 2,700 "are in charge of" sewage and 700 maintain hotels with more than 100,000 beds. We must accelerate the handover of housing and municipal service facilities to the local soviets.

The tasks of a further increase in agricultural production also demand their attention. In the RSFSR they have already made a considerable contribution to concentration and specialization in agriculture and to the transition of its sectors to an industrial footing. Some 973 complexes for milk production and 466 for beef and pork production are currently operating on the republic's kolkhozes and sovkhozes. Some 58 percent of the cows, 65 percent of hogs and approximately 70 percent of the poultry are accommodated in mechanized livestock sections. This has enabled us to reduce labor expenditure on the production of the principal agricultural products and to create a basis for its further growth.

While paying attention to the concentration and specialization of agriculture the soviets at the same time cannot divest themselves of the responsibility for an improvement in the work of the small-scale commodity livestock sections, for an increase in the assistance to the kolkhoz members, workers and employees in keeping private livestock and poultry and for the development of the subsidiary plots attached to the plants, factories and establishments. As the experience of the industrial enterprises of Omskaya, Kuybyshevskaya, Rostovskaya and other oblasts and krays shows, this is an important source of an increase in food resources.

Serious problems also confront the soviets in the implementation of comprehensive programs for the development the agricultural areas. The CPSU Central Committee and USSR Council of Ministers decree "Measures for the Further Development of the Agriculture of the RSFSR's non-Black Earth Zone" called for a more in-depth study of the processes occurring in the countryside. A decline in the numbers of the rural population in certain regions of Russia is causing concern. An analysis conducted by the local soviets shows that shortcomings in the organization of labor and cultural-everyday services are a reason for this. The marked shortage of municipal and social services compared with the city, the lagging in certain rural areas in the provision of amenities, the lack of good roads and irregularities in trade are reflected in people's frame of mind. This is where the soviet authorities must make exhaustive use of the rights and possibilities granted them by the USSR Constitution. Each instance of the nonfulfillment of plans for the commissioning of apartment houses, schools, children's preschool establishments and hospitals should be regarded as an extraordinary occurrence, and those to blame should be strictly punished. We must create housing-construction cooperatives in the countryside more actively and build paved roads, utilizing kolkhoz and sovkhoz capital and local resources.

A number of rural rayons ceased to concern themselves with so-called nonprospective centers of population. They hastened to close down primary schools and stores there. And people began to leave not only their native villages but the rayons altogether. It is now obvious how difficult it is to rectify such errors. But they must be rectified. As long as this village or the other exists and as long as people live in it, concern must be shown for it. And this is the duty of the soviets.

A cause of migration is the kolkhoz members' and workers' dissatisfaction with the low state of mechanization of labor, its seasonal and unnormed nature and the absence of shift work. Measures formulated on the farms for the next few years to reduce manual labor to a minimum thanks to an improvement in its organization, the introduction of progressive techniques and an increase in the skills of the agricultural workers will undoubtedly be of benefit here. And the development of subsidiary enterprises and production facilities will make it possible to employ rural workers evenly throughout the year. Who, if not the soviets, should undertake this work?

There are, incidentally, many other questions and tasks which cannot remain beyond the purview of soviets primarily concerned for an improvement in our people's living conditions and the plan-oriented improvement of their dependent territories. Dependent in the very highest meaning of this word signifying a further flourishing of socialist democracy on our soil, where the owners are the people of labor and the creators of material and spiritual values.

The attention of the soviet authorities in the localities is currently concentrated on insuring the successful fulfillment of the plan of the present year and the 5-year plan as a whole and the commissioning of projects nearing completion, preparations for work under winter conditions, the organized completion of the harvesting and the creation of the foundation of next year's harvest. The local soviets of the RSFSR are approaching the 26th party congress with an understanding of their duty to the people and their responsibility for everything affecting the happiness and well-being of their country.

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PLANNING AND PLAN IMPLEMENTATION

ELEVENTH FIVE-YEAR PLAN INVESTMENT PRIORITIES NOTED

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 8, Aug 80 pp 3-6

[Editorial: "On the Way to the 26th CPSU Congress"]

[Text] Our country has in 1980 entered the concluding stage of realization of the 10th Five-Year Plan targets and is preparing for a worthy greeting of the 26th congress, the decree on the convening of which was adopted at the CPSU Central Committee June (1980) Plenum.

The consistent implementation of the CPSU's economic policy, the party's great deal of organizing and political work in the masses and the constructive patriotic labor of the working class, kolkhoz peasantry and the intelligentsia have enabled us to achieve big successes in communist building in the 10th Five-Year Plan. The scale of social production has grown and its technical level has risen and a number of measures to improve the people's well-being has been implemented in these years.

The summary indicator of the development of the socialist economy--the increase in the national income--will have increased approximately 21 percent in the final year of the 5-year plan. Four-fifths of the national income is channeled directly into an upsurge in the people's well-being.

In industry the production volume is 25 percent above the 1975 mark. There is an increase in the manufacture of products of the basic sectors of the economy--metallurgy, power engineering and fuel industry. Thus 606 million tons of oil (including gas condensate) will have been produced at the end of the 5-year plan or 115 million tons more than in 1975. Gas extraction in this same time will have increased by a factor of 1.5 and will amount to 435 billion cubic meters. Power generation will have increased almost 25 percent and will amount to 1,295,000,000,000 kilowatt-hours.

The sectors of industry determining scientific-technical progress--the chemical, petrochemical, electronics, instrument-making and automotive--have developed at a preferential rate in the past few years. Some 3,500 new types of equipment, apparatus, instrument and material are assimilated and put into series production annually on average. There has been a considerable expansion of the introduction of progressive production engineering processes and production mechanization and automation means. All this has made it possible to enhance the technical-economic level of the manufactured products and improve the indicators of production efficiency. The labor of 1.4 million persons was saved in 1979 alone thanks to increased social labor productivity.

The long-term program of the development of agriculture and the reinforcement of its material-technical base formulated by the party is being implemented consistently. Thus far in the 5-year plan industry has supplied the countryside with hundreds of millions of tons of mineral fertilizer. In accordance with the 5-year plan, the kolkhozes and sovkhozes are acquiring more tractors, combines, trucks, agricultural machinery, fuel and other materials. The areas of irrigable and drained land have been extended appreciably. The average annual gross agricultural product in the period 1976-1979 increased by R10 billion or 10 percent compared with the Ninth Five-Year Plan.

New capacity in industry, agriculture, transportation and other sectors was introduced in past years of the 5-year plan thanks to the construction of new and modernization and retooling of operating enterprises. Capital investments in the economy were in excess of R500 billion. This afforded an opportunity in the last 4 years of securing an increase in fixed production capital--the main part of the country's national resources--of R273 billion.

The successes in economic building have enabled us to consistently implement the wide-ranging and large-scale social program determined by the 25th CPSU Congress. The scheduled targets for an increase in the average monthly wages of workers and employees and the remuneration of kolkhoz members were met in full. The increase in the wage rates and salary scales of middle-grade workers of the nonproduction sectors was completed in 1979. This important social measure improves the material situation of 31 million persons. Real income per capita will have risen 17 percent in the 5-year period.

Housing and municipal construction is a most important part of the social program. Some 500 million square meters of living space will have been commissioned in the 5-year plan.

The development of the USSR economy in the 10th Five-Year Plan testifies that our country is striding confidently ahead along the path to communism.

By the start of the 11th Five-Year Plan fixed capital will amount to R1.72 trillion, including R1.13 trillion of production fixed capital. It will have increased by a factor of 1.4 in the 10th Five-Year Plan alone. The country possesses basic raw material and energy reserves.

The USSR is entering the 1980's with not only strong economic but also scientific potential. Soviet scientists' major achievements in the use of the energy of the atomic nucleus, the creation of missile, space and aviation technology and artificial crystals and in the development of radioelectronics are well known.

Large-scale scientific research and design organizations have been created in the country. In the last 9 years alone the number of science workers has increased by a factor of more than 1.4 and passed 1.3 million, and the number of doctors and candidates of sciences here has increased 57 and 71 percent respectively. Expenditure on science in this time has increased 73 percent (compared with an increase in the national income of 49 percent) and amounted to more than R20 billion or 4.7 percent of the national income in 1979.

Consequently, we have an economic and scientific-technical potential which is enabling us to successfully accomplish the tasks of an increase in efficiency and quality, that is, of realizing the policy outlined by the 24th and 25th CPSU congresses.

"The 11th Five-Year Plan," L.I. Brezhnev observed in his speech at a meeting with the electorate of Moscow's Baumanskiy Electoral Okrug on 2 March 1979, "must embody the party's economic policy in full and absorb the latest achievements of economic and scientific-technical thought and our entire experience."* The Communist Party has determined the path of the solution of the key problems of the economy in the 11th Five-Year Plan.

These are, first, the elimination as quickly as possible of the difficulties in the operation of transport, primarily railroad transport. It is essential to rectify the situation with a long-term comprehensive program of transport's development.

Second, there has to be an appreciable improvement in the country's fuel-energy balance, primarily thanks to a reduction in the proportion of oil as the fuel for power stations. We will have to sharply increase gas extraction and use it instead of fuel oil and accelerate the development of nuclear power engineering and the eastern coal basins with the construction on the basis thereof of unique thermal electric power plants. At the same time saving fuel and energy by replacing energy-consuming equipment and extensively applying energy-saving technology and increasing the heat retention of industrial installations and residential buildings is posed as a statewide task.

Third, the main directions of the development of metallurgy and machine building have been determined. The metallurgists have not so much to increase the production of metal as to fundamentally improve its quality and broaden the assortment of metal products; the machine-building workers have to reduce the metal consumption and increase the technical level and quality of many manufactured machines and equipment. In the 11th Five-Year Plan the planning and managerial authorities must formulate measures to save metal, increase the durability of metal products, fight against corrosion and accelerate the introduction of powder metallurgy and metal substitutes.

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*L.I. Brezhnev, "Leninskim kursom" [Following Lenin's Policy], vol 7, Moscow, Politizdat, 1979, p 620.

Fourth, it is necessary in the sphere of capital construction, on whose efficiency overall indicators of economic growth and the rate of scientific-technical progress depend, to provide for measures to reduce incomplete construction, cut the estimated costs of and time taken to create new capacity (basically, through the retooling of enterprises) and coordinate the construction of capacities in contiguous sectors.

Fifth, it is important to insure the formation of a single foodstuffs complex and strive for the continuous supply of the population with foodstuffs, particularly meat. There is decisive significance here in the synchronous operation of all links of a single chain combining the production, shipment, storage and processing of agricultural products and trade.

Solution of the above key problems will make considerable changes to the structure and proportions of the economy and the organization of sectorial and territorial relations and will require the ascertainment of the elements in which the greatest and rapid effect may be derived at a price of minimum expenditure.

The fundamental basis of the next 5-year plan is, as L.I. Brezhnev emphasized at the CPSU Central Committee November (1979) Plenum, to consistently increase the people's well-being and to implement with twofold and threefold energy the party's policy of an increase in efficiency and quality. There is no alternative to this policy.*

At the current stage big opportunities for the realization of the highest goal of social production exist in the management sphere.

The CPSU Central Committee and USSR Council of Ministers decree "An Improvement in Planning and an Intensification of the Impact of the Economic Mechanism on an Increase in Production Efficiency and Work Quality" reflects continuity in the implementation of the party's economic strategy formulated by the 24th and 25th congresses with regard for the singularities of the country's socioeconomic development under the conditions of mature socialism. The decree envisages a complex of measures aimed at perfecting the planning and management of the economy and a strengthening of the role of the state plan with a simultaneous broadening of democratic principles and the rights of the labor collectives. These measures point all managerial and planning activity in the direction of securing the dynamic and balanced upsurge of the economy, the achievement of high final economic results and the fuller satisfaction of growing social and personal requirements.

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*See L.I. Brezhnev, "Speech at the CPSU Central Committee Plenum on 27 November 1979," Moscow, Politizdat, 1979, p 21.

It is a question of an improvement in planning and management at all levels of leadership of the economy, from the enterprise and association through the highest link--the USSR Gosplan. A comprehensive approach to the solution of urgent problems is also expressed in the fact that the system of measures which has been formulated provides for an improvement in all the main aspects and levers of the economic mechanism.

The preparations for the 26th CPSU Congress are serving as a strong mobilizing factor contributing to a new labor upsurge of the enterprise and organization collectives. L.I. Brezhnev emphasized in his speech at the CPSU Central Committee June (1980) Plenum: the maximum energy must be applied to insure the successful fulfillment and overfulfillment of the final year of the 10th Five-Year Plan, the timely commissioning of projects due for completion and the stable operation of the economy in 1981--the first year of the 11th Five-Year Plan. Such a major task as an increase in efficiency and work quality must constantly be within our sights.

A nationwide movement has developed in the country for a worthy greeting of the 26th CPSU Congress. The main attention is being concentrated on achieving the greatest practical results and the successful completion of the 1980 plan and the 10th Five-Year Plan as a whole.

The CPSU Central Committee decree "Socialist Competition for a Worthy Greeting of the 26th CPSU Congress" approved the initiative of the production pacesetters and labor collectives which have adopted upgraded socialist pledges and have mounted a shock labor vigil for a worthy greeting of the 26th CPSU Congress.

The task is to strengthen the impact of socialist competition on the achievement of high results by each worker, each collective and each sector of the economy, actively disseminate positive experience and evaluate critically existing shortcomings and oversights in management practice and adopt measures to do away with them.

Difficult and responsible tasks also confront the planning authorities in the period up to the congress. The draft main directions of the country's economic and social development in 1981-1985 have to be drawn up. This will require an in-depth interpretation of the socioeconomic processes currently occurring, the more purposeful formation of a rational structure of and proportions in the economy and a further improvement in sectorial and territorial relations. It is important to determine precisely a system of factors accelerating the all-around intensification of social production and enabling us with minimum expenditure and in the shortest time to derive the greatest effect and to satisfy more fully the growing requirements of the country's economy and population.

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INDUSTRIAL DEVELOPMENT AND PERFORMANCE

PALTEROVICH DISCUSSES INDUSTRIAL RETOOLING, RE-EQUIPMENT

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 9, Oct 80 pp 102-109

[Article by D. Palterovich, doctor of economic sciences: "Updating Equipment and Technical Re-Equipping of Production"]

[Text] The key characteristics of the process of renewing the production apparatus in the current phase of economic development are the following.

First, in connection with the increased scale and rapid growth of the stock of production equipment and limited labor resources, renewal of production equipment becomes increasingly important among the different forms of reproduction of the stock of production equipment (the role of extensive forms, quantitative expansion and capital repair of equipment, should decrease correspondingly).

Second, the primary objective of replacing equipment is increasingly to raise the technical level of production, not to eliminate the consequences of physical wear. The best alternative is to replace equipment generally with more progressive machinery entailing corresponding modifications of production technology. In other words, replacement of equipment becomes a part of the technical re-equipping of production.

Third, given the established transition to systems and sets of machines, the object of replacement must increasingly be the equipment of entire sections, shops, and enterprises, not particular machines and aggregate units. This is the approach that will orient the process of renewal to final national economic results: the production of new types of output, reduction of costs, and rise in labor productivity.

Fourth, contemporary scientific-technical progress has a contradictory impact on the service life and replacement time of machines. In most cases it promotes acceleration of replacement of equipment, a decrease in its service life, redistribution of resources in favor of replacement, and periodic upward revision of depreciation deduction norms for replacement. It necessitates the use of a more flexible system of calculating and using depreciation. At the same time, technical progress offers opportunities to extend the service life of machines and reduce the volume of repair by improving the reliability and durability of the machinery; this must also be used to achieve maximum correspondence between periods of physical wear and obsolescence.

Analysis of factual data shows, however, that extensive trends are seen in the development of the production apparatus of many sectors of the economy: production capacities are enlarged chiefly by quantitative expansion of the stock of equipment with very inadequate replacement of obsolescent and wornout machinery and replacement frequently does not affect the process of raising the technical level of production. As a result of extensive growth in the stock of production equipment the number of jobs in the sectors rises much faster than the number of employees that can fill them. In 1971-1974, for example, the stock of equipment in agriculture increased by 290,000 tractors and 57,000 grain-harvesting combines, while the number of machine operators rose by only 187,000. Therefore, 160,000 tractors and combines (46 percent of the total increase) did not have operators. The number of metal-cutting lathes in the national economy exceeded the number of lathe operators by 1.2-1.3 times in 1960, by 1.6-1.7 times in 1970, and at the present time, by our estimate, is almost twice as large.

Growth in the number of workers and the freeing of workers through mechanization lagged behind growth in the number of jobs, which inevitably leads to poorer use of the production apparatus of machine building and various sectors. At the same time, where equipment is replaced with more productive units at an intensive rate an increase in output is achieved while reducing the number of pieces of equipment and number of operators. In the Ninth Five-Year Plan in the cotton spinning sector of the USSR Ministry of Light Industry, for example, most of the new, highly productive spinning, ribbon, twisting, carding, and other machines were used to replace wornout equipment. As a result, a 9.6 percent increase in the output of cotton yarn was achieved without significantly expanding the stock of machinery, and the number of workers in cotton spinning production for the USSR Ministry of Light Industry decreased by 5.5 percent between 1969 and 1975.

The challenge is to accelerate intensive development of the production apparatus and secure all growth in capacities by using more progressive technologies and equipment. The intensive character of reproduction of the stock of equipment means that obsolete and wornout equipment is usually replaced not by similar equipment but by more productive and efficient equipment.

Under contemporary conditions when the number of metal-cutting lathes, basic construction machines, and many other types of machinery has reached a level that prevents efficient use of the equipment, the challenge of replacement should be to achieve growth in production capacities on the basis of qualitative and structural improvements in the stock of equipment while stabilizing or even reducing the amount of equipment.

All of these characteristics of the current phase of equipment renewal make it necessary to change this process from a spontaneous one, which it has for the most part been in the past, into a planned one and to strengthen the economic stimuli for replacement. How is this done in practice? Before answering this question, we must review the present situation with replacement of equipment in the primary sectors of material production and compare the actual and normative withdrawal of means of labor. In agriculture and construction existing equipment goes out of use quite quickly because of unsatisfactory storage conditions, improper use, and poor-quality repair. For example, according to our calculations in 1977-1978 the withdrawal of machinery and equipment was 10.1 percent in agriculture and 7.5-7.7 percent in construction, while in industry it was 2.4 percent. Under existing average norms of service lives for machinery and equipment (6.9 years in agriculture and 8.5 years in construction) and also given the rates of growth of the active part of fixed capital recorded in 1971-1978, the normative share of withdrawal of machinery and equipment is about 11 percent in agriculture and about 8 percent in construction.[1] Thus, the actual withdrawal in these sectors is close to the normative rate. About 90 percent of the grain-harvesting combines and 87 percent of the plowing tractors being produced go to replace wornout machines.

But the comparatively rapid writeoff of agricultural and construction equipment does not insure intensive development of the stock of machinery. In large part the written-off machines are replaced by similar models because renewal of designs lags behind the process of physical wear on the machine. Thus, equipment replacement often does not affect the technical level of production, even though it absorbs enormous resources.

Because technological progress in the principal industrial sectors is usually more rapid than agriculture, it would seem that equipment replacement there should occur in shorter time periods. In fact, just

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[1] The normative share of withdrawal under conditions of expanded reproduction of fixed capital depends on two figures: the normative service life and the rate of growth of fixed capital. The normative service life can be defined as a quantity inverse to the norm of depreciation deductions for replacement. Then the relationship between normative share of withdrawal (a), normative service life (m), and rate of growth in fixed productive capital (r) can be determined using the well-known empirical relationship formulated in the works of Ya. B. Kvasha and Ye. Domar:

$$a = \frac{r}{(1+r)^m} - 1.$$

the opposite happens. The share of equipment being withdrawn in industry is just one-third of that in construction and one-fourth of that in agriculture. Of course, this can be largely explained by difficult operating conditions and the fact that a great deal of agricultural and construction machinery is kept out of doors.

Because the physical wearing out of many machines for agriculture, construction, transportation, and the extraction sectors of industry occurs much faster than the process of obsolescence, the chief advantages of replacement, which have to do with the transition to using more productive and efficient equipment, are not adequately realized. Changing this trend requires, on the one hand, accelerating the processes of developing and introducing fundamentally new models of machinery for the sectors and, on the other hand, improving the reliability and durability of these machines to compensate, as much as possible, for the effect of difficult working and storage conditions. Combined with an improvement in preventive maintenance and repair these steps will make it possible to bring the periods of physical wear and obsolescence closer and, as a rule, to replace equipment after new, better models have appeared.

The predominant form of reproduction of means of labor in industry is renewal of fixed capital by expansion. Between 1970 and 1978 the value of the fixed industrial production capital (FIPC) increased 88 percent, that is, it grew almost 8.2 percent a year. The annual growth in recent years has been about eight percent. The average annual introduction of FIPC (relative to the value of FIPC at the start of the year) was about nine percent for 1976-1978, while withdrawal was less than 1.5 percent; in other words, in the overall process of renewal compensation for withdrawal requires only about one sixth.

It has been observed frequently in the economic literature that the inadequate volumes of withdrawal of FIPC and the increase in FIPC were one of the main problems of the new depreciation deduction norms instituted in 1975. As a result of introduction of the norms, the share of depreciation deductions for renewal of fixed capital in the total volume of depreciation deductions for the national economy rose from 50 to 59 percent while the share of deductions for capital repair dropped from 50 to 41 percent. The normative service lives of fixed capital declined from 29.4 to 25 years, while for FIPC the drop was from 25.6 to 21.3 years. This included the following: from about 37 to 32 years in the power industry, from 28 to 23 years in ferrous metallurgy, from 26 to 22 years in machine building and metalworking, from 26 to 20 years in the chemical and petrochemical industry, and from about 28 to 23 years in light and food industry. The normative service life of the active part of FIPC of all industry (including transmission devices) decreased from about 17 to 14 years, while for machinery and equipment it went from 15 to 12 years.

Analysis of figures from recent years shows, however, that there has in fact been no increase in USSR industry in the share of withdrawal of FIPC owing to dilapidation and wear. The average annual share of withdrawal of FIPC was (in percentages) 1.76 in 1971-1975, 1.5 in 1976, 1.5 in 1977, and 1.4 in 1978; the corresponding figures for machinery and equipment were 2.48, 2.2, 2.3, and 2.2.

To what extent does the actual withdrawal of fixed capital and the active part of this capital match existing standards? The table below compares the actual share of withdrawal of FIPC and its active part with normative withdrawal computed in four variations. 1962 depreciation norms and the actual rates of growth in FIPC during the 1960's were taken as the basis of the first variation; the second variation was based on 1975 depreciation norms and the actual rate of growth in FIPC in 1971-1978. The third variation keeps the normative service lives figured by 1975 norms, but takes an average annual growth of FIPC of seven percent instead of 8.2 percent for 1971-1978. A similar decline in growth of FIPC is forecast for 1979-1985. The fourth variation uses not only forecast growth rates for the 1980's (an average of six percent for the FIPC of all industry) but also forecast normative service lives of FIPC, which are 15 percent lower than existing service lives. In this we figured that scientific-technical progress demands a revision of depreciation norms about once every 10 years. The forecast of growth rates and normative service lives was done separately for FIPC and its active part and differentiated by industrial sectors. The calculations allow us to draw the following basic conclusions:

1. For industry as a whole the actual withdrawal of machinery and equipment in 1971-1978 roughly corresponded to normative withdrawal, but withdrawal of all FIPC in fact exceeded the standards established on the basis of actual conditions of the 1960's.

2. With the transition to new depreciation deduction norms in 1975 the normative share of withdrawal significantly increased and the actual share of withdrawal of machinery and equipment was three-fifths of the normative level. The share of withdrawal of all FIPC was just five-sixths of the standard;

3. A continuing decline in the average annual rate of growth in FIPC in coming years, which can be forecast fairly confidently, will increase the gap between the normative and actual withdrawal of equipment so actual withdrawal is five-ninths of normative, while for all FIPC it will be just three-quarters. The withdrawal of the passive part of FIPC is much closer to the standard than that of the active part. In other words, what is observed is above all inadequate withdrawal of machinery and equipment, which greatly retards scientific-technical progress in industry;

4. A continuing decline in the rate of growth of fixed capital and normative service life of equipment, for which the stage will be set

Table 1

	Average Annual Share of Withdrawal of FIPC, %					Average Annual Share of Withdrawal of Machinery and Equipment, %				
		Normative, by Variation					Normative, by Variation			
	Actual, 1971-1978	I	II	III	IV	Actual 1971-1978	I	II	III	IV
All Industry	1.65	1.1	2.0	2.3	3.3	2.35	2.4	3.9	4.2	4.8
Included in above:										
Power	0.60	0.4	0.9	1.1	1.8	0.80	0.6	1.3	1.5	2.2
Fuel	2.80	2.9	3.6	3.7	5.1	4.44	4.5	6.3	6.6	8.6
Ferrous Metallurgy	1.03	1.0	2.0	2.3	3.1	1.56	2.1	3.8	4.0	5.4
Chemistry	1.25	0.8	2.2	2.4	3.5	1.91	1.3	4.6	5.0	6.7
Machine Building and Metalworking	1.31	1.1	1.7	2.2	3.2	2.18	2.9	4.2	4.8	6.5
Lumber, Wood Processing, and Pulp-Paper	3.44	2.8	3.5	3.8	5.2	5.31	5.4	6.5	6.8	8.8
Building Materials	2.65	1.3	2.3	2.5	3.8	4.46	4.4	5.9	6.2	8.3
Light	2.16	1.0	1.9	2.3	3.3	3.76	2.6	4.4	4.6	5.0
Food	1.90	1.0	2.0	2.2	3.2	2.85	2.4	3.7	2.9	5.3

in the 1980's by accelerated sceintific-technical progress, will lead to an increase of nearly 50 percent in the necessary volume of withdrawal compared to the current normative level. As a result, the normative share of withdrawal of FIPC will reach 3.3 percent, while for machinery and equipment it will be 5.8 percent, thus exceeding the current level of actual writeoff by two and 2.5 times respectively.

The degree lag of actual withdrawal of obsolete and wornout FIPC behind the standard differs in different industrial sectors. If we take the second variation of normative withdrawal, the actual withdrawal of machinery and equipment for the same period was below the standard in ferrous metallurgy and the chemical industry by 2.4 times, in machine building and metalworking by 1.9 times, in the power industry by 1.6 times, in fuel industry by 1.4 times, in food and the building materials industries by 1.3 times, and 1.2 times in light industry and the lumber, wood processing, and pulp-paper industry. In other words, the lowest indicators were in the chemical industry, ferrous metallurgy, and machine building, which are the sectors that exercise a decisive influence on technical progress in the entire national economy. If these sectors are to attain the forecast standard of withdrawal in the 1980's writeoff will have to be more than tripled compared to the actual level of recent years. And the largest part of the equipment being introduced will go for replacement; growth in the stock of machinery will slow down considerably, and in some sectors the stock will decrease numerically. Needless to say, all this demands a great deal of time and also an acceleration of scientific-technical progress.

Analysis of actual and normative volumes of share of withdrawal of FIPC and of machinery and equipment by value illustrates the need for radical steps to increase the scale of replacement of obsolete and wornout equipment in industry as a whole in the 11th Five-Year Plan by at least 50 percent over the current level, and by about 100 percent in machine building, chemistry, and metallurgy.

The results we have cited comparing normative and actual withdrawal by value are to some extent conditional. Specifically, they do not take account of the fact that with change in equipment prices and the cost of a unit of production capacity, considerably more money is required to replace machinery produced in the last 10-20 years. Therefore, a larger share of equipment goes for replacement than indicated in the calculations. But not all equipment that is withdrawn will be replaced; part of it is liquidated, which reduces the actual share of machines used for replacement in comparison with the calculated figure. Finally, by no means all equipment going for replacement is in fact new.[2] It is practically impossible to consider all these conflicting circumstances in comparing the value indicators of actual and normative withdrawal.

The figures in the summary report of the presence, change, and replacement of equipment (form No 75-PP introduced in 1977) makes it possible to obtain a number of indicators that characterize the stock of equipment, introduction, withdrawal, and the age structure of the principal types of equipment. The total size of the stock of machinery and equipment in industry increased 3.2 percent in 1977 and 3.4 percent in 1978, but the total growth in its production capacity was greater because the newly introduced equipment was significantly more productive than equipment introduced earlier. For individual types of equipment the growth in numbers ranged from one to five percent for a majority of types, going up to 22 percent for some; there was a decrease in the stock of equipment for certain groups.

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[2] In 1967 55 percent of the total value of finished goods turned out by enterprises of several machine building ministries was delivered to production; in 1978 this figure had dropped to 42.1 percent. In the same period the percentage of articles that had been in production for more than 10 years rose from 16.2 to 27.3 percent. But by no means all articles delivered to production in a given year are absolutely new, even for our country (that is, being introduced in the USSR for the first time). Of the articles introduced in 1973 47.9 percent by value were new; in 1978 it was 39.5 percent. Many of the relatively new models and even some absolutely new ones do not provide significant growth in productivity. Moreover, new equipment does not always fit its specific spheres of application.

Differences in the rates of growth of stocks of equipment reflect in large measure scientific-technical progress and cause structural changes in favor of progressive groups of equipment. In 1977 growth in the number of metal-cutting lathes was three percent, while for large, heavy-duty, and unique lathes it was 4.5 percent, for machine tools with digital program control more than 20 percent, for automatic mechanical processing lines 10 percent, machine tools for electrophysical and electrochemical processing eight percent, coal combines 2.3 percent, and coal complexes with mechanized supports for face work — 19.9 percent.

According to the data of the above-mentioned statistical survey, roughly 43 percent of the machinery and equipment installed in USSR industry in 1977 was introduced on a replacement basis, including 26.3 percent of the metal-cutting lathes, 20.8 percent of forge and press machines, 25.6 percent of casting machines, less than one-third of the electric motors, 23.5 percent of overhead cranes, and so on. Thus, the resources of many types of equipment were used primarily to expand the stock of equipment, that is, for the extensive form of development.

At the same time, the resources of machines for mining, peat industry, logging, and various sectors of food industry which are used in difficult conditions (excavators, bulldozers, skidding tractors, and the like) were used chiefly (50-80 percent, sometimes even more) to replace equipment being withdrawn. For a number of reasons which will be discussed below, the percentage of spinning, twisting, roving, weaving, and other textile machines going for replacement is very high. But most steam and gas turbines, generators, metalworking equipment, machines to produce polymer materials, chemical fibers, and various other types of equipment were used to expand the stock of equipment.

As a rule, the shorter the service life of the particular type of equipment the higher its share of withdrawal will be. For example, coal combines and complexes which have a five-year standard service life show an average annual rate of withdrawal of more than one-quarter of the fleet, and most of them are withdrawn owing to dilapidation and wear, while a smaller percentage is withdrawn to be moved to other sites. But the difference in the scale of writeoff often results not from natural differences in the service lives of different types of equipment but rather from the distribution of their resources between replacement and expansion of stock.

For example, according to approximate calculations the normative service lives of weaving machines, forge and press machines, and metal-carving lathes are 15, 16, and 17 years respectively. In other words, they are fairly close. Nonetheless, in 1977 six percent of the weaving machines were written off, which is 3.7 times the level of writeoffs for metal-cutting lathes, and 2.7 times greater than forge and press machines. The primary reason for this is that more than three-quarters of the total number of weaving machines introduced were installed on a replacement basis, whereas the bulk (75-80 percent) of metal working equipment went for expansion of the stock of equipment. Incidentally, the large volume of replacement of textile equipment resulted not just from the appearance of more productive shuttle-less weaving machines and spindle-less spinning machines but also the lag in launching production areas at new textile factories. In other words, both where writeoff was small and where it was considerable, the level of writing off was spontaneously determined whereas it should unquestionably be an object of planning and management.

On the average about 13 percent of all withdrawn equipment is not written off but sent to other enterprises. This is primarily universal lathes which are sometimes transferred to other enterprises and coal complexes, combines, excavators, and a few other machines which are frequently sent to specialized plants for capital repair and then reinstalled. There are comparatively few such "secondary" resources. Only about 10 percent of all equipment installed in 1977-1978 had been used before; in other words, in a large majority of cases new equipment was being installed and the mobility of the stock of already installed machines remained very low. Specifically, just 10 percent of the metal-cutting lathes and forge and press machines (including less than four percent of the equipment with digital program control) installed in the year had been used at other enterprises earlier and then been sold, transferred, or delivered after capital repair, which is done fairly infrequently at specialized repair plants.

Increasing the mobility of the stock of equipment and creating conditions that make it easier to sell machines which for some reason are no longer needed but can be used at other enterprises is one of the important ways to intensify the reproduction and use of equipment. In the United States, for example, there is a vast market for used equipment in which tens of thousands of units of metalworking equipment are sold each year. In 1978 as many as 1,000 machine tools with digital programmed control, which was 1-2 percent of metal-cutting lathes in use, were sold on this market. A number of firms engage in buying and reselling these lathes; sometimes they repair them, modernize them, and sell them at prices that average between one-third and two-thirds of the cost of new equipment. Under our conditions the creation of a well-organized system for record-keeping and selling used equipment would make it possible to put a large amount of idle machinery into economic circulation, meet equipment needs more fully, and use every machine more efficiently.

The average age of equipment withdrawn in 1977 because of dilapidation and wear was 13 years, just one year more than the average normative service life of machinery and equipment in industry, which is about 12 years. At the same time, the average age of equipment being withdrawn after use under difficult conditions (coal combines, mine conveyors, cement kilns, and certain other types) does not exceed the normative service life and is sometimes less than it. Papermaking machines were written off at an average of 13 years against a normative service life of 19 years. The writeoff times of certain types of equipment in the knitted goods and food industries and in building materials production were also less than normative time.

However, the equipment of the machine building industry serves much longer than the normative period: metal-cutting lathes were written off at an average age of 19 years, which means that they were used two years longer than the normative period. For casting machines this difference was about three years, while for electrical welding equipment it was 5-6 years. On the average, tractors, bulldozers, and electric motors work 3-4 years longer than the normative period in industry; spinning machines, weaving machines, knitting machines, and equipment in the sugar, butter and fat, and several other industrial sectors last 1-3 years longer than the norm.

The period of their "extra" service may not seem large, but if certain types of equipment are excluded, especially equipment in extracting industry which is frequently written off ahead of time owing to difficult operating conditions or other factors not related to normal wear or obsolescence (accidents, defects, change in needs), we can see that the remaining equipment works an average of 3-5 years longer than the standard, which is 25-35 percent. The most scarce machine, for example certain rolling mills, lathes, presses, papermaking machines, and others, are often used for twice the normative service life, and expenditures for repair exceed the cost of new machines several times.

Almost two-thirds of the machinery and equipment in industry is less than 10 years old and 35 percent is less than five years old. Generally speaking, the youngest part of the stock of equipment is equipment with fairly short service lives and progressive new types of machinery such as skidding tractors and machine tools with digital programmed control (about 75 percent of them are less than five years old), bulldozers and automatic assembly lines (40 percent), and so on. The share of young equipment in the structure of traditional machines for manufacturing industry is much smaller, and it has shown a tendency to decline in recent years.

Specifically, until recently the share of old equipment in the stock of metalworking equipment was dropping. From 1962 to 1972 the share of metal-cutting lathes older than 20 years dropped from 24.8 to 14.4 percent. But in the last few years the trends in the age structure of the stock of equipment have changed slightly. According to our calculations, more machine tools and forge machines are now being transferred to the old age group than withdrawn from it. The share of machinery less than 10 years old is decreasing, while the percentage older than 20 years is increasing slightly. The share of machines in the 15-20 year age bracket is also growing. To stop this trend we must significantly increase the volume of wornout and obsolete equipment written off and direct a large proportion of new equipment to replacement, which makes it possible to sharply curtail growth in the stock of machine tools and, later, even achieve a numerical decrease.

Inadequate replacement of equipment results from mistakes in managing this process as well as various objective factors. The most important of them are the scarcity of certain types of equipment, especially new equipment; the fact that associations and enterprises do not have adequate stimuli to conserve means of labor; the orientation of capital investment primarily to the creation of new capacities, which must be fully supplied with equipment.

These factors must be opposed by steps to improve the planning of equipment and to stimulate its renewal. It seems to us that these measures should be taken during development of plans for the distribution of equipment among sectors and within the sectors themselves; when planning the process of reproduction of fixed capital and change in the capital-output ratio on a sector scale; in long-range plans for technical re-equipping of production and renewal of fixed capital in associations and at enterprises; when planning specific measures related to replacement of equipment with new equipment.

The need for equipment replacement should be determined in the stage of planning future equipment needs. Underestimation of the need to renew existing stock of equipment has been a significant shortcoming in the past when planning equipment needs. Plans primarily make provision for the needs of new construction and then for enterprises being expanded and rebuilt, so that little was allocated for current equipment replacement and sometimes nothing at all was left. In our opinion, the balances and plans for distribution of resources for every type of equipment must single out the part which is designated for technical re-equipping and reconstruction. In this case, equipment replacement will be insured as a part of the technical re-equipping of production.

At the same time, we believe it is necessary for every sector and association to plan the percentage of existing equipment that is subject to replacement in each year of the planning period. At the association and enterprise level it should be determined on the basis of an analysis of the age and condition of equipment and the possibility of receiving new equipment; at the sector level it is possible to make consolidated calculations using the formula of Ya. B. Kvasha and Ye. Domar and then reconcile these figures with the plans of the associations and enterprises.

The associations and enterprises that are writing plans for technical re-equipping have the primary role in planning equipment replacement. At the present time, assignments for replacement of equipment in annual enterprise plans are usually envisioned in the section "Technical Development and Organization and Production" along with steps to introduce progressive technology, means of mechanization and automation, improvement in the quality of output, and scientific organization of labor. At the same time, the need for equipment for replacement is envisioned in the section "Norms and Calculations of the Need for Material Resources." In many cases the assignments for equipment replacement are not properly reflected in five-year enterprise plans. As a result, the principles of comprehensiveness and continuity in planning are violated with respect to equipment replacement. Moreover, the quality of the information base for development of plans for equipment replacement and the level of economic substantiation of replacement measures at most enterprises do not help solve the problems of long-range planning for renewal of the stock of machinery and selecting the most efficient alternatives and objects of replacement.

Many enterprises, along with highly efficient variations for equipment replacement, are carrying out alternatives with very long payback periods for expenditures. Thus, according to figures from a study made by V. M. Terekhov of the Scientific Research Institute of Economics of the Ukrainian SSR State Planning Commission, efficient measures to replace metal-cutting lathes and forge and press machines at numerous plants of the Ministry of Machine Building for Animal Husbandry and Fodder Production were repaid in 1.5-2.5 years while less efficient measures took 10-12 years to be repaid. At most of the plants studied, however, no calculations of the efficiency of alternatives were made, even though it is impossible to insure a rational choice of objects of replacement without them.

Improving planning for renewal of equipment as a component of the technical re-equipping of production requires development of appropriate methodological recommendations. The recommendations and planning document forms developed by the Scientific Research Institute of Economics of the Ukrainian SSR State Planning Commission, the Institute of Economics of the Academy of Sciences Ukrainian SSR, and the division of new technology of the Ukrainian SSR State Planning Commission are highly useful.[3] According to these recommendations, which unfortunately cover only basic industrial equipment, the development of a plan for replacement and modernization of outdated and wornout equipment is broken down into a number of stages. In the first stage there is an analysis of the technical-economic level of the equipment and machines subject to replacement are identified. Work is based on an analysis of inventory cards for accounting of fixed capital which show the type of equipment, its cost, the place and date of installation, and the number of capital repairs performed. Because the actual wear on a machine depends not only on service life but also on operating conditions, repair, and maintenance, in our opinion the card must include a periodic (at least once every five years) estimate of the degree of wear based on both age and actual condition (expert evaluation by the chief engineer's office). In the second stage there is an economic substantiation and choice of efficient options for replacement and modernization of obsolete and physically worn equipment, while in the third stage draft five-year and annual plans are drawn up to carry out these steps.

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[3] "Methodological Recommendations on Planning Equipment Renewal," Kiev, Ukrainian SSR State Planning Commission, Ukrainian Scientific Research Institute of Scientific-Technical Information.

According to the methodological recommendations, the list of replacement measures planned becomes the basis for calculating the need for equipment for this purpose. However, replacement and modernization plans, although they are singled out in a separate section, include only steps not envisioned by assignments for the introduction of progressive technology, mechanization, automation, and the like. This is done to avoid duplication of plan assignments and double counting of the same equipment requirement. If the same measure is included in another section of the plan as well, a note to this effect is made on the appropriate line, which will make it possible to avoid duplication in calculating the equipment requirement and when figuring expenditures and impact.

The forms of the renewal plan envision not only specific lists of equipment being replaced and introduced, but also the number of units, estimated cost, volume of capital investment (by sources of financing), growth in capacity (by number of units of equipment and by volume of output or work), and finally, such indicators of the efficiency of renewal measures as change in labor-intensiveness, prime cost of output, profit, and repayment period of expenditures. An efficiency calculation card is made up at each enterprise to include these data in the plan; this card shows expenditures and economic and social results for several alternatives of carrying out the measures.

It is important that the replacement plan include not individual units of equipment but whole complexes of articulated or interrelated machines. The part of the equipment of complexes which cannot be used in the particular facility owing to change in technology but still has useful service life can be transferred to other sections of the facility or sold. In our opinion, it would be advisable to establish a number of economically accountable offices for sale of used equipment to make it easier for enterprises to market unneeded equipment and put it into economic circulation more rapidly. These offices could lease some equipment.

We believe that the system of figuring and using depreciation deductions should be made more flexible to provide associations and enterprises with adequate financial resources for technical-reequipping. In particular, associations and enterprises should be given the right, under definite conditions (rapid technical progress, availability of sufficient profit, and the like), to write off the value of means of labor by accelerated depreciation and more rapidly accumulate capital to replace the equipment. For enterprises with highly worn equipment the share of depreciation deductions for replacement that is transferred to the production development fund should be increased. At the present time, this share is very small. In 1978 depreciation deductions for replacement in industry were more than 20 billion rubles, but all expenditures from the production development fund in industry were 6.8 billion rubles.

Some economists suggest transferring depreciation deductions for capital repair to the production development fund so that associations and enterprises can independently determine the ratio between different forms of reproduction of fixed capital. Such a system would certainly have to be introduced gradually, as associations become ready to use it intelligently.

To ease the process of replacing obsolete and worn out equipment for associations and enterprises, especially when equipment should be written off or replaced before expiration of the normative service life because it has become obsolete, it would be advisable to relate the losses from underdepreciation to the charter capital, not to the results of economic activity (with the exception of cases where the enterprise is proven to be guilty of damaging the equipment).

This decision can be substantiated not only by the need to accelerate the writing off of wornout equipment but also by the existence, in addition to underdepreciation, of a significant amount of equipment that is being used after service life has expired. In this case the total amount of depreciation figured exceeds the initial value of the equipment and "overdepreciation" occurs; because there are no statistical records the total of this amount is not known. According to calculations by V. I. Terekhov, the cost of losses from writing off machinery ahead of time at eight plants of the Ministry of Machine Building for Animal Husbandry and Fodder Production in 1977 was 3.2 percent of the balance value of the equipment written off, while "overdepreciation" for machines written off before expiration of the normative service life was 19.4 percent of the value of all equipment written off in the year. Thus, losses from underdepreciation were one-sixth of the sum of "overdepreciation," which can evidently serve as an adequate source to compensate for losses from writing off early. This approach seems methodologically sound because normative service lives are not maximums. They are average periods and writing off one part of certain equipment a little early while another part lasts beyond the normative life is entirely natural.

In conclusion let us emphasize that the rate and economic efficiency of equipment replacement depend largely on growth in the production of equipment, the rate of introduction of highly productive new complexes and systems of machines, and the ratio between growth in cost and the productivity and other use features of the new equipment. Numerous studies have demonstrated that if the productivity of new models of machinery is only slightly more than the productivity of existing machines (for example 10-20 percent), reducing existing service life (depreciation periods) is uneconomical in most cases. But if the old equipment is to be replaced by fundamentally new means of labor that raise labor productivity at least 50-100 percent, it is advisable to significantly reduce the service life of the old equipment.

Thus, in addition to improving planning and stimulation of equipment replacement, all steps aimed at accelerating the development of machine building and raising the technical level of its output should insure more rapid renewal of the production apparatus.

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UTILIZATION OF RESOURCES AND SUPPLY

PLANT OFFICIAL CRITICIZES SUPPLY ECONOMY MEASURES

Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Sep 80 p 2

[Article by G. Garbuzov, deputy director of the Shebekinskiy Machine Building Plant, Shebekino, Belgorodskaya Oblast, "The Game of Economics"]

[Text] Supply. Everyone at the plant is occupied with it. And not because the suppliers are not smart enough, but because the system for supplying materials and equipment has not yet been perfected.

Gossnab USSR is supposed to distribute resources. But now the picture is like this. The plant calculates its requirements and takes them to the local organs of GUMTS [State Administration for Materials and Equipment Supply] and the supply administration of its own ministry, for "defense." But what's it for, this defense, if the norms for consumption have been coordinated and approved beforehand by the main committee and by the industrial branch institute? One would think they'd give the enterprise what it is due; no one will take leftovers. And then make them answer for violating the norms if such a thing happens. That's not the way it is. Many levels of dishonest counting of the plant's estimates begins, with dozens of variables. And this procedure results in one thing—reduction of the amount of materials which were ordered.

Why reduce them when the estimates were made on the basis of scientifically-grounded norms? Because both the supply organs and the ministry have been given the task of economizing on resources. And instead of proposing a scientifically-grounded system of measures for doing the job, the problem is solved by the hacking method: they cut a little there, save a little here, and there you have it—economy.

And every economic planner knows what this game of economics leades to. The enterprise is forced to get its material resources by hook or by crook, not by the plan approved for production, but beyond that—perhaps something will be left over. And the amount left over is considerable.

But why do we take too much even at the risk of worsening the financial position of the enterprise? Because disrupting the plan affects both the economic planners and the collectives more seriously than do unauthorized reserves.

And everyone knows where this threat arises. Let us take the system which has evolved for firmly establishing the consumers with the suppliers. How is this done at our plant, for example? We submit the specifications to GUMTS. From there they are sent to Soyuzglavmetall /Main Administration for Interrepublic Deliveries of Metal Products/ which establishes a supplier for us. But if there are no resources there for a certain type of article, no one ever reports this to us, nor do they offer a substitute. And after all, we expect the supplies to come on time. When they don't the plant starts to get into a sweat. We'll find a way out nevertheless—we take whatever there is, regardless of what we need from the point of view of rational economic planning. Hence, the overconsumption of raw materials, supplies, electrical energy and labor costs. But this has nothing to do with maintaining standards—it is a question of fulfilling the plan at all costs.

Or take another example. The plant always used to get girders and channel iron from Yenakiev, angle iron from Dneprodzerzhinsk, and sheet stainless steel from Zaporozh'ye. All right next door. The materials shipped to the plant used to get here in a day. But now, we get girders and channel iron from Novokuznetsk; angle iron from the Sverdlovskaya Oblast; and sheet stainless steel from Chelyabinsk and Verkhnyaya Salda. It is not ruled out that the enterprises in the Urals and Western Siberia are at the same time getting these same materials from the metallurgical plants of the European part of the USSR. But who will finally put a stop to these back-and-forth shipments? And how can one be a supplier under these conditions if he knows for certain that deliveries from the Urals and Western Siberia will never be made on time?

But let us now look at the suppliers' lack of coordination from the other side. For example, our plant produces equipment for the building and reconstruction enterprises of several ministries. It is put to use on construction projects and has to be paid for only from accounts for capital investment. But payment is delayed right and left for months and sometimes for years. Now the funding hasn't been opened, or the other way around, has been closed and our equipment is not needed in the given planning-accounting period; or now the construction project has been "frozen" but we've already shipped our articles. Who will pay for them?

We get the answer to this question every month: by the 25th, as a rule, only half the monthly plan for sales has been fulfilled. The remainder we'll have to "scrape together." Participating in the "battle for sales" are departments of Gosbank and Stroybank, USSR; the ministries of our debtors; organs of the people's control; party and soviet organizations. We send hundreds of telegrams and telephone messages to the different ends of the country. And it is far from always that we receive payment for the bills in return. And that's why we are forced to ship products only to those enterprises which are able to pay and not to those for whom the products are required according to the plan. Hence also the breaches of the schedules for freight shipments and the goods cars standing idle in excess of all the norms, and many other economic costs. But what is to be done? After all, the wellbeing of the collective depends on fulfilling the plan for sales.

Why has such a chase been set up? After all, any product manufactured in a planned procedure and shipped to the consumer which ordered it should be paid for by that consumer; and if he hasn't any money, then with credit from Gosbank or Stroybank. That's what it says in the decree of the CPSU Central Committee and USSR Council of Ministers "On Perfecting the Economic Mechanism." There is even provision for how to organize estimates on credit. Indeed there is such a provision but in practise it is not actually used. Somebody hasn't prepared it, someone else hasn't established the new procedure; and at the end of the month we are again part of the chase. When will it all end?

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REGIONAL DEVELOPMENT

MOLDAVIAN OFFICIAL REVIEWS ECONOMIC GAINS

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 7, Jul 80 pp 26-35

/Article by I. Ustiyan, deputy chairman of the Moldavian SSR Council of Ministers and chairman of the Moldavian SSR Gosplan: "Planning the Adoption of the Achievements of Scientific-Technical Progress"/

/Text/ At the present stage in the development of socialist society - a society of a mature socialism - science is becoming a direct production force with the aid of individual and material factors of production. Basically new scientific, technological solutions, based on the use of the traditional laws of mechanics and discoveries in other fields of natural science, are being embodied in public production. As a result the rise in the production force of labor more than ever before depends upon "the successes in the field of intellectual production and the successes of the natural sciences and their use." *

V. I. Lenin wrote: "The substitution of machine labor for manual labor comprises all progressive work of man's technology. As technology develops manual labor is displaced and man is replaced by more and more complicated machines. Machines and the objects needed for their manufacture occupy an increasingly important place in the total production of a nation." ** Lenin directly linked the technical reoutfitting of the entire national economy with the rational structure and organization of the reproduction process, adequate for the first two factors. To fully use the advantages of these three factors, caused by the rapid rates of scientific-technical progress, is possible only on the basis of the well planned movement of socialist economy, where "all the plans of the individual sectors of production must be strictly coordinated and linked to comprise the unified economic plan that we so need." ***

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* K. Marx and F. Engels, Complete Works, Vol 25, Part I, p 93.

** V.I. Lenin, Complete Works, Vol 1, p 100.

*** V.I. Lenin, Complete Works, Vol 42, p 154.

The growing dimensions of production are complicating the processes of planning and management, the basic ways for the improvement of which were determined by the 25th CPSU Congress, subsequent plenums of the Central Committee of the Party, the 12 July 1979 Decree of the CPSU Central Committee and the USSR Council of Ministers, and the speeches of L.I. Brezhnev.

When the dimensions of public production are growing, much importance is attached to orienting plans and economic management methods toward intensive factors of economic development, the rapid adoption into production of scientific-technical achievements and leading experience. In the Moldavian SSR use is being made of all the best that has been accumulated in the Soviet Union in the field of planning scientific-technical progress, organizing the management of the national economy, developing the cost accounting method, and strengthening the influence of economic levers and incentives for raising the efficiency of production and the quality of work. Planning methods for organizing and managing public production are aimed at creating more favorable opportunities for the development of production forces and the improvement of production relations.

The basic trends of scientific-technical progress in Moldavia's economy are to improve the structure of the republic national economic territorial-production complex by creating new progressive sectors (machine building, power, electrical equipment, instrument building, radio electronics, chemical and others); mastering the production of new kinds of product; the adoption of new, more progressive technologies; the comprehensive mechanization, automation and intensification of production processes; the creation of an integral agro-industrial complex with full inter-farm cooperation and agro-industrial integration; and the improvement of organization and management based on the use of economic-mathematical methods and computers.

Powerful industrial and agro-industrial enterprises and associations, large power systems, which are equipped with highly productive machines and equipment, fully mechanized, semi-automated and automated production lines have been created in the republic. More than 4,300 flow line, mechanized flow line and automated production lines are in operation in industry. More than 1,000 fully mechanized and automated sectors, shops and facilities and more than 300 units of equipment with programmed control are being used. More than half of fixed capital has been replaced by new industrial capital.

During the years of the past five-year plan the greater part of Moldavia's fixed capital was modernized. Six billion rubles in capital investments went into the republic's national economy; more than 30 large industrial enterprises were put into operation.

Based on the use in production of the scientific-technical achievements there was an economic savings of more than 320 million rubles; nearly 100,000 men were freed for other work. The realization of nearly 1,500 inventions and more than 100,000 proposals for improving production methods saved more than 260 million rubles.

The adoption of the achievements of science and technology is being carried out on a comprehensive basis, which makes it possible to mechanize and automate the entire production cycle - from receipt of raw materials, materials and assemblies to the shipping of the finished product. The Moldavian Hydroelectric Power Station (GRES), the Kishinev Thermal Electric Power Central, the Eastern electric power networks, the Kishinev Cardboard Articles Combine, the Bendery Starch-Treacle Plant, the Bel'tsy, Lipkany, Rybnitsa, Tiraspol' and Chadyr-Lunga grain products combines have been fully mechanized and automated. In addition, 127 enterprises were fully mechanized in their basic production.

The achievements of scientific-technical progress are being adopted through measures called for in plans for the technical reoutfitting of enterprises and associations. The latter are formed for each production element, ministry and department and are coordinated by the Department of Science and Technology of the Moldavian SSR Gosplan. This promotes the drafting of technological processes and solutions aimed at raising labor productivity, conserving material and labor resources, increasing the volumes and improving the quality of manufactured product. This includes, for example: the production of enamel dishes using rigging with hard alloy and polyurethane inserts, thermopulse welding of film articles and decoration; the manufacture of polyethylene pipes by the Kishenev association of chemical enterprises for drip irrigation in agriculture, which has resulted in a more than 250,000 ruble economic savings; and the creation of a mechanized warehouse for raw materials, semifinished goods and finished product at the "Floare" Production Association.

Since the beginning of the five-year plan more than 350 progressive technological processes have been assimilated and adopted. In the electric power field this includes the purification and low temperature drying of superpower transformers, the low temperature treatment of the insulation of power transformers, and the aerial mapping when choosing high voltage routes, which makes it possible to determine the probability of earth creep and others. A method for transmitting electric power on an experimental semi-open industrial line of 100 kV is also being used. At the Moldavian GRES a pilot model of a 250 milliwatt steam and gas unit was adopted for the first time in the USSR.

In the light industry through the adoption of highly efficient spinning and twisting machines which perform four operations (spinning, throwing, twisting and winding), labor productivity has nearly doubled in thread twisting and has increased by more than 20 percent in spinning. The percentage of such machines rose to 84.3 percent in 1979 as opposed to 60.5 percent in 1975. In the production of raw silk fibers the substitution of nonreciprocating looms for reciprocating looms more than doubled labor productivity. Nonreciprocating looms now account for more than half of the loom equipment park.

In the furniture industry the technology for pressing furniture parts with heating in a high frequency electrical field has been assimilated. The production of wood chips from timber waste for the manufacture of splint-slabs is being expanded; this results in a reduction in the production cost and a savings in lumber. Thus, the use of one cubic meter of splint-slabs, for the manufacture of which inexpensive raw materials (shavings, saw mill waste and firewood) are expended, takes the place of 2.5 cubic meters of lumber.

After reading the materials of the USSR Gosplan and the State Committee for Science and Technology about low temperature (saline) technology for cement production, which was tested at the Akhangaranskiy Cement Combine in the Uzbek SSR, the Moldavian SSR Gosplan and the Moldavian SSR Ministry of Construction Materials studied this method and concluded that it is possible to use this new technology at the Rybnitsa Cement and Slate Combine. Prior to 1 January 1981 the technical documentation will be ready for the modernization of the equipment. With the adoption of the new technology the expenditure of electric power will be reduced by 25 to 35 percent, the production cost of cement by 15 to 20 percent, and the productivity of the thermal units and the cement mills will rise by 50 to 80 percent.

During this five-year plan more than 340 new kinds of industrial product (machines, equipment, instruments, materials, food products, etc.) have been assimilated; a significant number of the products were assimilated at enterprises of local industry (automatic generators, oscillographs, electric loaders, lamps, electric pumps, etc.). Many manufactured articles of the machine building and instrument building sectors are exported to more than 50 foreign countries.

Work is being done to improve the quality of industrial product. Each year there is an increase in the number of new manufactured articles bearing the State Mark of Quality. The percentage of highest category quality product of all gross product in 1979 reached 11.7 percent as opposed to 3.2 percent in 1975. This includes, respectively, 46.4 percent and 8.5 percent at enterprises of the Ministry of the Furniture Industry, 16.3 percent and 3.7 percent at enterprises of the Ministry of the Light Industry, 8.5 percent and 0.8 percent at enterprises of the Ministry of the Food Industry. Highest results were achieved by furniture factories No. 2, 4 and 5 , where the percentage of such product reached 67.6, 90.5 and 56.7 percent, respectively, and also the "Floare" Association for the Production of Light Footwear with Textile Uppers (74.6 percent), the Kishinev Experimental Candy Factory "Bukuriya" (43.5 percent) and others.

Work to improve the quality of manufactured articles and other measures provided a growth in product of more than 400 million rubles in 1979 as compared with the preceding year; 73 percent of this growth was achieved by increasing labor productivity.

As is known, transportation is now a bottleneck. This is particularly felt at those production facilities where it is necessary to transport a large amount of cargo for short distances. The Special Design Bureau Transprogress (Moscow) has done some experimental work on the creation of seven systems for the containerized pneumatic transport for the delivery of nonmetalliferous construction materials at enterprises of the Moldavian SSR Ministry of Construction Materials. It is planned to design and build three such transportation arteries: at the Kishinev Production Association Nerudstrom, at the Belyayevo Construction Materials Combine and at the Krikovsky Mines. The adoption of these systems will make it possible to free nearly 600 ZIL motor vehciles with trailers and save more than 9 million rubles each year.

The Party's agrarian policy, which was developed at the March (1965) Plenum of the CPSU Central Committee, marked the beginning of a new stage in the development of agriculture. The subsequent execution of the policy has made it possible to put into effect large reserves for increasing the production of agricultural product, to give agriculture an industrial nature, and to provide higher and more stable rates for its development. Today the highly developed agrarian-industrial sector of Moldavia's economy is clearly formulated. Occupying 50 percent of the total fixed production assets of the national economy, the agro-industrial complex (APK) produces more than 60 percent of the cost of the total public product and privides 54 percent of Moldavia's national income. While in the Eighth Five-Year Plan the average annual gross product of agriculture was scarcely more than two billion rubles, in the Tenth Five-Year Plan it will reach nearly three billion rubles. Agriculture is the only sector of material production, where the entire growth of gross product is achieved by raising labor productivity with an absolute decrease in the number of workers. In 1980 labor productivity will increase by 16 percent, which will provide all growth in the sector's gross product with a reduction of 8,000 men for agricultural work.

Occupying one half of one percent of the USSR's farm land, the Moldavian SSR produces more than 3.4 percent of all agricultural gross product and 1.3 percent of the livestock. This includes 25.7 percent of the grapes, 10 percent of the fruit, 4.5 of the vegetables, 4.8 percent of the sunflowers, 2.5 percent of the sugar beet, 1.4 percent of the grain, 33.5 percent of the tobacco, 1.6 percent of the meat, 1.2 percent of the milk, 1.2 percent of the eggs and others.

While in 1975 the total gross product per 100 hectares of farm land was 66,100 rubles, in 1979 this figure was 112.300 rubles. In the forward regions of Moldavia - Slobodzejskiy, Novoannenskiy and Kriulyanskiy - these figures are 182,000, 146,000 and 135,000 rubles, respectively.

These results have been achieved by the creation of a vigorous material-technical base, the broad use of intensification factors of production, and the adoption of the achievements of scientific-technical progress based on the solutions of the 24th and 25th CPSU congresses and the subsequent plenums of the CPSU.

In accordance with the Decree of the CPSU Central Committee (May 1976) the theoretical and practical aspects of increased specialization and large scale concentration of agriculture based on interfarm cooperation have been drawn up. The technological and organizational and management features of integrated production facilities horizontally (on an interfarm basis) and vertically (agro-industrial integration) have been formed.

The following trends in the development of the agro-industrial complex have been determined: increased zonal specialization for the rational use of land, the natural and economic conditions of each region; the organization of large state, kolkhoz and interfarm specialized industrial enterprises for poultry and hog farming, for the feeding of calves and the reproduction of the herd, and also in vineyard management, orchard management and vegetable growing; the extensive adoption of the achievements of scientific-technical progress and improving the economic relations between subelements of the agro-industrial complex; improving the qualitative structure of vineyard management, orchard management and vegetable growing in order to supply the enterprises that process grapes, fruit and vegetables with the needed biological and technological quality for the production of new kinds of product according to variety and quality.

In the Moldavian SSR new union-republic associations for the production, processing, transporting, storage and delivery to the customer of agricultural product have been created. They are the Moldplodoovoshchprom [Moldavian Fruit and Vegetable Industry]. the Moldvinprom [Moldavian Grape Industry]. and Moldefirmaslo-prom [Moldavian Essential Oil Industry.]

There have also been qualitative and quantitative changes in the kolkhoz-cooperative sector. Regional kolkhoz councils and a Moldavian Kolkhoz Council have been organized for managing the economy of the kolkhozes and interfarm organizations. New forms of organization and management have made it possible to raise the level of intensification of agricultural production based on the better use of personal and material-substance factors.

By improving the technological systems of production an industrial technology for raising agricultural crops has been adopted: corn, vegetables (tomatoes), sunflower, sugar beet, tobacco and soy beans. The industrial technology is based on essentially new machine methods for performing production operations, which fully exclude manual labor and reduce to a minimum the number of machine work. The sequence of operations is accomplished according to the technological scheme: "basic and pre-sowing preparation of the soil with the simultaneous application of fertilizers and herbicides - sowing - harvest".

The industrial technology significantly reduces labor expenditures, sharply increases product output and improves its quality. Its use, for example, in growing corn has made it possible for the Chadyr-Lunga farmers to expend for the production of one centner of corn only 0.4 man-hour as opposed to 3.3 man-hours on the average for Moldavia and to obtain a harvest of 60 centners per hectare. While previously at almost half of the kolkhozes vegetable growing operated at a loss, at present in regions where there is commercial vegetable growing the profitability reaches 64 percent.

An example of the high economic efficienty of industrial technologies is the experience of the machine operators of the Grigoriopol' interfarm crop rotation, managed by I.G. Zakharov, where 24,000 tons of tomatoes were harvested from 650 hectares (an income of 4.4 million rubles). What is more net income exceeded 2 million rubles, production profitability was 112.9 percent and labor productivity increased two-fold. At the Slobodzeyskiy interfarm crop rotation the harvest of vegetables was 470 centners per hectare, while the brigade of the interfarm crop rotation, headed by USSR State Prize winnter A.P. Klimenko, obtained 650 centners of tomatoes per hectare. USSR Supreme Soviet Deputy and USSR State Prize winner Z.G. Puchilov at the tomato harvester gathered 2,200 tons of tomatoes in the crop rotation. The production cost of one centner was 7.3 rubles, labor expenditure was 3.3 man-hours, profit from one hectare exceeded 3,700 rubles, and the level of profitability reached 108 percent.

In 1980 it is planned (See table) to expand the amount of land to be sown for raising agricultural crops using this technology (the public sector).

Crop .	Thousand of hectares	Yield, in centners per hectare
Corn	345 (100 percent of the land to be used for grain)	55 - 60
Sunflower	80 (44 percent of sown area)	27-30
Vegetables	20 (35 percent of land used for vegetables)	
Including tomatoes ...	15 (47 percent of land used for commercial plantings)	400 - 450
Sugar beet	10 (8 percent of land for factory sowing)	400

At present the food industry in Moldavia is processing one-fourth of the USSR's wine materials, 14 - 15 percent of the wine, 9 - 10 percent of the canned goods (excluding canned fish), including 18 to 20 percent of the canned tomatoes, 35 to 40 percent of the canned fruit and 15 to 18 percent of the natural juices, 4 - 5 percent of the vegetable oil, and 3 to 4 percent of the sugar. Moldavia' percentage of the gross product of the USSR's food industry is nearly 3.7 percent. Nearly 5 percent of the industrial-production assets of the sector is concentrated in Moldavia, including 15 percent of the all-union fixed assets for viniculture, 12 percent for fruit and vegetable growing and 42 percent for the initial processing of tobacco.

The workers of industry, while receiving high quality agricultural raw material, are striving to improve the technological process, to carry out the technical reconstruction and reoutfitting of production in order to create new kinds of product and to achieve a higher quality. The comprehensive mechanization of processes in the sugar, oil and fat and wine-making industry has been completed. There has been a sharp increase in the number and an expansion in the product list of the means of small mechanization and manual mechanized tools. At enterprises of the Moldavian SSR Ministry of the Food Industry 246 flow-line, mechanized flow-line and automatic production lines are in operation. There are 255 fully mechanized and automated sectors, shops and production facilities (more than 18 percent of them were adopted during the current five-year plan).

Ten sugar plans are processing nearly 27,000 tons of beets every 24 hours. According to the unit capacity of the enterprises, the volume of sugar production, the sector holds third place among the sugar producing republics of the USSR, behind the RSFSR and the Ukrainian SSR. Seventy-six production sectors of the sugar beet industry have been automated. The Gindesht sugar and spirit combine and the Falesht sugar plant have had their basic and auxilliary production fully mechanized.

In the baking industry the basic technological processes have been mechanized and partially automated. The enterprises have been equipped with warehouses for the bulk acceptance and storage of flour. The volume of bulk flour deliveries in 1979 was more than 90 percent. At sector enterprises 43 fully mechanized lines with progressive designs of ovens have been installed. They bake more than two thirds of the total bread and rolls.

At enterprises of the Moldavian Wine Industry 1,061 flow-line mechanized and automated lines, 207 fully mechanized and automated sectors and shops are in operation. During the first four years of the Tenth Five-Year Plan 441 lines and 46 sectors and shops were adopted. These include the fully mechanized lines for grape processing with a productivity of 20 to 30 tons per hour, the fully mechanized sectors and automated shops with a productivity of 500 to 700 tons per 24-hour period and others.

The canning enterprises make extensive use of designs from the Moldavian Scientific-Research Institute of the Food Industry, which make it possible to sharply increase labor productivity, improve the quality of product and conserve raw materials. These include, for example, a progressive method for canning food products - freeze drying. The USSR's only shop for the freeze drying of fruit, berries and the products for processing them has been created in Moldavia. It produces 15 tons of dry powder fruit juices per year, which amounts to 250 tubes of reconstituted juice. During the aseptic canning the sterilization of semi-manufactures, juices and purees is done onea flow line. The product is stored in hermetically sealed containers with a capacity of 15 to 50 cubic meters. The constant freezing of fruit and vegetables using the fluidization method and in a dense layer speeds up the process 20-fold and reduces losses of raw materials. What is more there is an economic savings of nearly 15 rubles per ton of frozen product. Tunnel drying with the indirect application of heat is used; this procedure is intended for the production of high quality dried fruit and vegetables, grapes, spices, medicinal grasses, and the wastes of canning and vine making production facilities; a new polymer covering based on epoxy resin for protecting reservoirs in the food industry.

Promising methods for storing perishable agricultural produce, such as fruit, vegetables and grapes, are being created and used.

The experience of recent years demonstrates that one of the economic methods may be a method for storing fruit and vegetable produce, that is based on the electrostatic technology. *

To speed up the solution of questions concerning the storage and long distance transporting of agricultural raw materials a comprehensive program is being devised for 1981- 1985. Industrial experients that were conducted in 1979 on the shipping of fruit in refrigerated trucks and railroad cars using ozone combined with cold reduced losses to 10 percent.

Scientific institutions and scientific-production associations are working to solve problems of storing agricultural produce and its long distance transport. The Moldavian SSR Academy of Sciences is performing research on the phenomenon of the interrelationships between the biochemical characteristics of fruit and the time periods that they can be stored. The Kishinev Agricultural Institute imeni M.V. Frunze has devised and adopted a method for storing apples and pears in polyethelene packaging, a technology for storing fruit and grapes in refrigerators in a controlled gas atmosphere. The Agro-industrial Association Moldplodoovoshchprom and the Physics-Technical Institute of Low Temperatures of the Ukrainian SSR Academy of Sciences, the Moldavian Scientific-Research Institute of the Food Industry and the Institute of Applied Physics of the Moldavian SSR Academy of Sciences have tested the technology for the cooling and transporting of peaches using liquid nitrogen.

Scientists of the Moldavian SSR Academy of Sciences in 1979 adopted 106 works and created 17 models of new equipment. The economic savings was 11,400,000 rubles. In particular, the models and algorithms and programs for determining the optimal capacities of fruit and vegetable storage facilities and the capacities of the technologoical lines for the enterprises of the canning industry yielded an annual savings of 217,000 rubles; EFI type installations which are intended for the electrospark alloying of the parts of machines, mechanisms and tools, the application of covers of favorable metals and others - 3 million rubles.

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* For details see the articles: Yu. Bokserman, Nauchno-tekhnicheskiy progress in rezervy proizvodstva /Scientific-technical progress and production reserves7, Planovoye khozyaystvo, 1980, No 2, pp 36-42; I. Ustiyan, Rabotayet ozon /The ozone is working7. Izvestiya, 1980, 30 April.

A noncontact gauge for the temperature of drying drums was created for the Bender Silk Combine. The economic savings from its application was 200,000 rubles. Estimates have been made on the optimum seismic stability of an area for the construction of water supply facilities of the Rezina Cement Plant and the Kishinev Color Television Plant. The experimental-production testing of a method for improving the quality of apple seedlings using zinc and manganese top dressings of vegetative multiplying rootstocks has been completed. By a decision of the Moldavian SSR Ministry of Agriculture the method is to be widely used in agricultural production.

The synthetic evironment for the dilution and freezing of agricultural livestock semen, which was developed by the Academy of Sciences and the Moldavian Scientific-Research Institute of Livestock and Veterinary Sciences, shows much promise. By decree of the USSR Ministry of Agriculture this concept is to be extensively used throughout the USSR. The economic savings from its adoption in the Moldavian SSR alone amounts to 320,000 rubles.

A substantial contribution to speeding up scientific-technical progress is being made by Moldavia's institutions of higher learning. The majority of their scientific work is being performed on a contract basis, in response to direct orders from enterprises, kolkhozes, sovkhozes and other organizations. During the current five-year plan more than 100 projects with an economic savings of 9.5 million rubles have been adopted into the national economy.

The Kishinev Polytechnical Institute imeni S. Lazo has created and adopted an automated system for monitoring and diagnosing digital units of radioelectronic equipment using the "Elektronika 100" computer. The annual economic savings amounts to 300,000 rubles. For the first time in industrial practice the institute created a complex of electric equipment with a cutting plasmotron, which uses compressed air as the only plasmo forming medium. The installation makes it possible to cut sheet metal with a thickness of up to 80 mm. The productivity of the process is increased 1.5 to 2-fold as compared with existing installations. The plasmotron is patented in the USA, France, West Germany, Japan and Sweden.

During the first four years of the current five-year plan Moldavian scientists have created 150 varieties and hybrids of agricultural crops. According to results of 1979 a decision has been made concerning the regionalization in Moldavia of eight new varieties and hybrids.

Extensive dissemination of this form of linking science and production can be seen in the scientific-production associations (NPO). In the agro-industrial sector there are 13 associations for the selection and seed growing of grain and vegetable crops for the various sectors of agricultural production. This has made it possible to bring sectoral science closer to the needs of agriculture, to strengthen the experimental-production base of the scientific-research institutions and to reinforce the influence of scientists upon the rates of scientific-technical progress.

In 1979 much attention was devoted to research on obtaining programmed harvests of winter wheat and sugar beet. Research was performed on the study of promising machinery for the cultivation of winter wheat according to industrial technology.

The Scientific-Production Association Selektsiya devised an industrial technology for raising wheat. Its adoption in the kolkhozes and sovkhozes in the Glodyanskij, Ungenskiy and Kriulyanskiy rayons of Moldavia made it possible to obtain a harvest of more than 50 centners per hectare. The Scientific-Production Association Gibrid created and handed over for State strain testing 18 corn hybrids. The Moldavian-420 MV and Moldavian-385 MV hybrids in 1979 were tested in kolkhozes and sovkhozes on 614 and 5,699 hectáres, respectively. The yield of the first hybrid was 58.7 centners per hectare and for the second hybrid it was 51.4 centners per hectare. The Scientific-Production Association Dnestr is successfuly developing and adopting industrial technologies for the cultivation of tomatoes, onions, cucumbers, carrots, and sweet peppers; new varieties of vegetable crops have been created, which grow in 150 oblasts and krays of the USSR on more than 100,000 hectares of land.

An important means for raising the productivity of agricultural crops and to improve their quality is the use of gibberellin, a vegetation growth regulator. Its use in growing tomatoes at the kolkhoz imeni Sverdlov in Slobodzeyskiy rayon yielded an increase in harvest on experimental sectors from 110 to 367 centners per hectare, or 36 to 79 percent more than in the control sectors. In 1978 at kolkhozes in Rybnitskiy, Kriulyanskiy, Dubossarskiy and Slobodzeyskiy rayons nearly 2,000 hectares of tomatoes were treated with this preparation. As a result the additional harvest on the average was more than 100 centners per hectare. The additonal harvest of cherries was 10 to 30 centners per hectare, or 19 to 50 percent greater than in the control sectors.

One trend in scientific-technical progress is the adoption of automated control systems using computers. During the Ninth Five-Year Plan and the Tenth Five-Year Plan computer technology was firmly entrenched in the practice of planning and managing the Moldavian national economy.

At the level of complexes under construction and first sections three intersectoral and 18 sectoral automatic control systems (ASU), 17 automated systems for controlling enterprises (ASUP) and three automated systems for controlling technological processes (ASUTP) have been put into operation; the development of six intersectoral and 29 sectoral ASU systems, 33 ASUP systems and six ASUTP systems is continuing. Eighty-three computer centers, departments, laboratories and other subdivisions are in operation, which have 160 computers at their disposal.

With the use of computers the Moldavian SSR Gosplan and the agro-industrial ministries and departments have examined the national economic efficiency of production in selling the produce of the agro-industrial complex and have developed programs for the development of some of its subcomplexes. Estimates have been made for the grape and wine making, the tobacco, essential oil, fruit and vegetable canning and sugar beet subcomplexes of the agro-industrial complex.

As a result of the research a decision has been made to substantially change the structure of the wine making industry (by increasing the percentage of cognac, champagne and dry wines); to expand the production of high quality tobaccos such as the "Virginia" and "burley" tobaccos with a low nicotine content, to increase the volumes of production and state purchases of fruit; to reduce losses of sugar by reducing the amount of time for processing and improving technologies and creating in the Moldavian SSR a perfume and cosmetics industry.

The research demonstrated that the grape and wine-making subcomplex, for example, by improving the structure, assortment and improving the quality of its product with the same volumes of raw material can increase national economic income at the republic level by more than 1.3-fold, and the tobacco subcomplex by 4.2-fold. Similar data were obtained for other subcomplexes comprising the Moldavian SSR's agro-industrial complex.

Proposals to alter the structure, assortment and quality of product in five subcomplexes of the agro-industrial complex will be reflected in the plans for the economic and social development of the Moldavian SSR in 1980 and for the Eleventh Five-Year Plan.

In accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers concerning the improvement of the economic mechanism, the Moldavian SSR Gosplan is devising target comprehensive functional programs aimed at solving problems that are common to all sectors, which have fundamental significance for the Soviet economy, including programs for conserving metal and fuel, reducing the percentage of manual labor, increasing the production of new articles and so forth.

In addition, in accordance with the decree of the CPSU Central Committee and the USSR Council of Ministers "concerning the measures for further increasing the production and procurement of fruit in the Moldavian SSR" and "concerning the development of irrigation in the southern regions of the Moldavian SSR", target regional programs for the better use of natural riches and the comprehensive development of Moldavia's economic zones are being compiled.

The availability of fertile soil, an abundance of warmth and the the availability of labor resources in the southern regions of Moldavia create favorable conditions for the significant development of the production forces and for increasing the volumes of agricultural product. In particular, there is a need for the construction of irrigation systems with the use of water from the Dunay River and Kagul and Yalpug lakes. The total area to be irrigated is 336,000 hectares. The realization of this program is creating good conditions for viniculture, fruit growing, vegetable growing, grain farming and the production of livestock feed. The cost of the product, which will be obtained after the completion of the work, will amount to more than 200 million rubles, the annual additional net income will be approximately 140 million rubles. This will ensure a recovery of the expenditures with in 7 to 8 years. Both programs have been included in the plan for the economic and social development of the Moldavian SSR for 1980 and will be realized in the Eleventh and Twelfth five-year plans.

These are the historical aspects of the adoption of the achievements of scientific-technical progress in the national economic complex of the Moldavian SSR.

The achievements of scientific-technical progress in the national economy of Moldavia, as in the USSR's national economy, are enormous. It is important that the new equipment support new technology that has been developed in the entire production technological flow line, and call for an economic (useful) savings at all segments of the national economic organism.

Thus will the problem of the planning and economic organs be eased for adopting the achievements of science and technology into production, for the collectives of the enterprises and associations themselves will be vitally motivated to replace outdated equipment with new in order to raise labor productivity, the growth in the amounts of product manufactured and the raising of its quality, and also national economic efficiency.

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REGIONAL DEVELOPMENT

PARTY SECRETARY DISCUSSES TRANSBAYKAL AREA DEVELOPMENT

Moscow IZVESTIYA in Russian 16 Sep 80 p 2

[Article by M. Matafonov, first secretary of the CPSU Chitinskaya obkom: "To Uncover the Riches of Siberia"]

[Text] Throughout the nation preparations are underway for the 26th Congress of Lenin's party. The Soviet people are endeavoring to meet this outstanding event with new labor successes. The report of Comrade L. I. Brezhnev at the June (1980) Plenum of the CPSU Central Committee outlined the crucial questions for the economic development of our state. These included the fuel-energy and transport problems, and raising production efficiency. The problems of the Eastern Transbaykal are organically linked to them, and in certain aspects are more acute than in the other regions of the nation. This applies primarily to the raw material resources and their rational use.

Over the last two decades the problem of tapping the natural resources in our region has attracted ever-greater attention, and the construction of the Baykal-Amur Mainline [BAM] has opened up new opportunities for using the rich resources. The north of Chitinskaya Oblast, where construction has already started on the final section of the BAM, is exceptionally rich in mineral resources and these are concentrated in a comparatively small territory of the Kodaro-Udokan ore province. This creates favorable prerequisites for their integrated development within a single industrial center. It is a question of the nation's largest deposits of copper, rare metals, iron, titanium, hard coal and other minerals.

A year ago, the Siberian Division of the USSR Academy of Sciences and the Chitinskaya Obkom held in Chita a second scientific conference on the problems of the integrated development of the deposit and the development of the productive forces in the north of the oblast. The conference particularly pointed out that the development of the deposit and the creation of the Udokan industrial center would provide a strong impetus for the development of the productive forces in the entire Transbaykal area.

The Udokan deposit of copper-bearing sandstones was discovered in 1949. Since then it has been studied in detail and is viewed as the nation's major raw material source for the copper industry. Its reserves make it possible to build the nation's largest mining and metallurgical complex for nonferrous metallurgy here. More than one-half of the ore can be worked by the open-pit method using highly productive equipment. The ores are characterized by a high quality and contain valuable side components. In the adjacent region a number of other deposits have been discovered. This makes it possible to increase the mineral raw material base for the future Udokan mining and processing combine by 1.5-2-fold.

The conference noted with satisfaction the large amount of geological prospecting and research work which had been carried out at Udokan, as well as the scientific research, the economic and experimental-procedural studies. At the same time it was emphasized that the existing data are still insufficient for drawing up the preliminary plans for the construction of the GOK [mining-processing complex], and it is essential to speed up their collection. The All-Union Conference on the Development of the Siberian Productive Forces which was recently held in Novosibirsk also paid particular attention to the problem of Udokan, and emphasized the need to begin the practical development of the deposit in the following five-year plan.

The USSR Ministry of Nonferrous Metallurgy and the Siberian Division of the USSR Academy of Sciences have heeded this advice, and have agreed upon a comprehensive program. In their recommendations they stated: "To work out highly efficient production processes for mining and processing the ores of the Udokan deposit and to study the specific conditions for building the Udokan GOK and the copper and chemical plant." The program is designed for the 11th Five-Year Plan. It will create a basis for designing the GOK and the further development of research both on the unique deposit itself and on many problems related to the development of this industrial center as a whole. It must be pointed out that the organizations involved in developing the program have a scientific start in the research and studies done on the BAM. At present there must be detailed and specific studies directly on the Udokan deposit and the development of this deposit is the concern of the chief efforts of the designated program which is in turn a section of the comprehensive Siberia Program.

The program includes the questions of increasing the resources of copper ores and other minerals in the region, carrying out experimental design work on the methods of mining and processing the ores, the organization of an experimental industrial complex on the spot for working out the ore concentrating methods, and so forth.

For developing research on the designated problem, it is essential to have specific financing and well organized measures.

Incidentally, recently the scientific conferences on the development of Siberian productive forces have been held only once every decade. The actual state of affairs and the tasks outlined by the CPSU congresses on the socioeconomic development of the nation for each 5-year period require, in our view, the holding of such conferences also every 5 years.

It is not difficult to note that the growth of the region's scientific potential is directly related to increasing the economy of both its individual parts as well as the entire region. One can easily be convinced of this having compared the dates of the forming of the Siberian Division of the USSR Academy of Sciences and the discovery of oil in Western Siberia; the organization of the Yakut Affiliate of the Siberian Division of the USSR Academy of Sciences and the discovery of the diamond-bearing pipes in Yakutia; the extensive development of scientific institutions in Irkutsk and the beginning of the tapping of the energy resources of the Angara, and so forth. In our opinion, it is now the turn of the Eastern Transbaykal Area.

The development of any region, kray, oblast or industrial center cannot be viewed in isolation or separate from the overall state of affairs in the country, and particularly in Siberia. Interregional contacts should be carried out in all areas: economic, management, scientific, and so forth. The Eastern Transbaykal Area should be organically incorporated in all the elements of these relations, including in the system of the USSR Academy of Sciences and its Siberian Division. In essence Chitinskaya Oblast remains the last "blank" spot on the map of the academy sciences of Siberia, as here there is no academy institute.

The question of organizing a Transbaykal interdisciplinary scientific research institute of the Siberian Division of the USSR Academy of Sciences in principle has already been settled. All conditions for its creation are present and this must be done in the very near future.

In the problem of utilizing the natural resources of the Transbaykal Area, the development of Udokan stands out in its greatness. By 1983, the BAM will reach Udokan, and without delay it is essential to begin direct construction of the projects at the GOK. However, up to now no solutions have as yet been provided for many questions related to the designing of the combine, the quarries, the methods for processing the ores and their integrated use, or the location of the metallurgical processes for converting the copper concentrates. There are no plans for the transport and energy support of the industrial center. The possible consequences of the industrial development of the area of the deposit have been given little thought, since model calculations have been started only recently for this area which is located in a high-mountain enclosed basin, in a zone of permafrost and increased seismicity.

Great attention is being given to the elaboration and improvement of the methods for processing the ores. In this regard, in the next 2-3 years, directly at the deposit it is essential to build an experimental mining and concentrating enterprise, since even a one percent increase in the extraction of the copper with such volumes of ore processing is the equal of the capacity of a medium-sized mine. At the same enterprise it is advisable to build a unit to study the possibilities of dry separation of the copper ores of the entire industrial center under industrial conditions.

The successful carrying out of the preparatory work and the subsequent construction of the production projects for the GOK will largely depend upon organizing the management of the Udokan program. For this reason, it is already time to have a single body in charge here.

We feel that the USSR State Committee for Science and Technology should determine this body. It must be given all the means for rapidly carrying out the scientific research and experimental design studies on the comprehensive use of the Udokan ores. The funds for the actual development of the deposit should also be turned over to the same hands.

Obviously, this should be the directorate of the Udokan GOK under construction and which is under the USSR Ministry of Nonferrous Metallurgy. The directorate should be responsible for the state of affairs and finance all the work related to scientific research, experimental design studies, create the experimental industrial production and provide the initial data for designing all the units of the complex.

It is useful to recall that the directorate of the Noril'sk Mining and Metallurgical Combine was organized in 1934, and metal from the ores of this deposit was obtained only at the beginning of the 1940's. A solution to the question of the body in charge of the copper mountain in the north of Chitinskaya Oblast cannot be delayed. We feel that in the 11th Five-Year Plan we must begin actual development on the Udokan copper ore deposit.

One other aspect. Earlier mention was made of the completely satisfactory state of scientific research on the forecasting, exploration and surveying of a majority of the solid-state minerals in the nation and, in particular, in Siberia. We are inclined to link this to the good organization of scientific research and to the development of a network of scientific geological institutions under the USSR Ministry of Geology and the USSR Academy of Sciences, and to their excellent ties with the practical organizations. Suffice it to say that all the oblasts of Siberia have institutes in the geological area under just the Siberian Division of the USSR Academy of Sciences.

At the same time, there are just two mining institutes for all of Siberia and the Far East. We propose that the Transbaykal interdisciplinary scientific research institute of the Siberian Division of the USSR Academy of Sciences should develop a major mining department along with the others.

The development of the economy in Chitinskaya Oblast at present and in the foreseeable future will depend essentially upon its scientific potential. The entire course of development of our state requires a sharp strengthening of scientific research in the Eastern Transbaykal Area.

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